



***PROJECT SPECIFIC ENVIRONMENTAL, HEALTH &
SAFETY AND TRAINING REQUIREMENTS MATRIX
FOR THE ON SITE DISPOSAL FACILITY PROJECT -
PHASE II***

NOVEMBER 1997
REV - 0
Contract No. FSC 614

**EMERGENCY PHONE NUMBER 648-6511
RADIO: "CONTROL"**

APPROVALS:

Mike Hickey, Project Manager

Date

Steve Wentzel Safety & Health Team Leader

Date

Gregg Johnson, Fluor Daniel Fernald Health & Safety Officer

Date

ENVIRONMENTAL, HEALTH & SAFETY, TRAINING REQUIREMENTS MATRIX

Project: **ON-SITE DISPOSAL FACILITY PROJECT- PHASE II**

The General Requirements listed in section 1 of this matrix apply to all activities of this project

ACTIVITY (TASKS)	HAZARD IDENTIFICATION	FREQUENCY & TYPE OF AIR AND PERSONNEL MONITORING REQUIRED	PERSONNEL PROTECTIVE EQUIPMENT	TRAINING REQUIREMENTS	MEDICAL MONITORING AND SURVEILLANCE REQUIREMENTS	ADMINISTRATIVE AND ENGINEERING CONTROL MEASURES	PERMITS	DECONTAMINATION AND DISPOSAL PROCEDURES
1. GENERAL PROJECT MINIMUM REQUIREMENTS NOTE: These General Requirements apply to all sections of this matrix	General industrial safety hazards		<p>The minimum protection for any work activity is:</p> <ul style="list-style-type: none">Safety glasses with rigid side shields or goggles (safety glasses ANSI Z87.1 listed)Steel/fiberglass toed, leather safety (shoes) boots (ANSI Z41 listed)Hard hat (only ANSI Z89.1 listed)Leather palm gloves shall be worn for manual activity when handling sharp, rough, or other like materials that may cause hand injuryTraffic Safety Vest, made of high visibility material to be red or orange	<p>Site GET Training</p> <p>Site Access Training</p> <p>Orientation to the Health and Safety Requirements Matrix and sign the acknowledgment log</p> <p>Awareness training on the Fluor Daniel Fernald FEMP EMPLOYEE SAFETY AND HEALTH HANDBOOK and Construction Rules & Regulations is required for all personnel on this project</p> <p>OSHA Outreach training for all supervision</p>	<p>Personnel assigned to an FEMP project and performing actual tasks are required to participate in the FEMP Medical Monitoring Program</p> <p>Medical surveillance exams will be conducted based upon the following frequency or as determined appropriate by FEMP Medical Services:</p> <ul style="list-style-type: none">Pre-assignment (baseline)Annual (within one year of previous physical)After incidents, potential exposures, or physician recommendationExit (termination) <p>Personnel shall report all injuries to Fluor Daniel Fernald Medical Department, promptly</p>	<p>The Fluor Daniel Fernald Construction Manager (CM) shall hold a safety kick-off meeting before the start of work to brief all personnel on the safety requirements of this project</p> <p>Tailgate (each Monday) safety meetings shall be documented on a "Minutes of Safety Meetings" form by contractor</p> <p>When new tasks are begun (e.g.- start of shift, daily, after lunch and when new tasks are begun) a job briefing shall be held to review the activities by the supervisor of the involved workers</p>	Fluor Daniel Fernald Work Permit	

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Work at a CERCLA site with potential to encounter radioactive materials	TLD (as per posted area)		RAD I Site Worker 8 hours Supervised field experience	Baseline and exit bioassay (urine) sample program	Before breach of any existing facility surface the surface & equipment must be surveyed and verified non- contaminated by Fluor Daniel Fernald RCT All equipment brought to site from other facilities or vendors must have preliminary radiological surveys prior to commencing work on site	FDF RWP	All tools, equipment, and materials must have excessive dirt and mud removed and be radiologically surveyed (as required) prior to leaving the FEMP site
	Personnel Injury / Site Safety			All personnel shall know to call 648-6511 or "Control" on the radio for emergency assistance		Radio communications available (at work area) at all times during work hours Fluor Daniel Fernald CM and Contractor supervision shall "walk your space" daily to ensure that no unidentified hazards exist in the work area Any hazard not corrected shall be flagged/ marked and reviewed during a safety meeting		

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Heat Stress	Contractor shall conduct ambient temperature monitoring and; Physiological monitoring, as required	Ice vest may be used in hot conditions, as defined in heat stress plan	Safety briefing on heat stress	Fluor Daniel Fernald Medical approval for working in hot environments	Contractor's written Heat Stress Program (Fluor Daniel Fernald Approved) Work/rest regimen as required Rest areas to be shaded Access to cooled drinking water Heavy equipment shall have operator shaded from direct sun		
	Cold Stress	Contractor shall conduct ambient temperature monitoring	Clothing suitable for cold weather/conditions	Safety briefing on cold stress		When temperature goes below 20 degrees F: <ul style="list-style-type: none">define an approach to cold stressidentify warm-up areas to be used Work/rest (warm-up) regimen may be used		
	Housekeeping					Housekeeping shall be maintained at all times during the project Trash and materials shall be stored and secured from windy conditions Slipping hazards shall be corrected on working/walking areas prior to start of work		Contractor shall ensure that area is free of any materials or debris that may be wind blown Contain & remove all trash/debris daily

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Chemical Exposures of chemicals/ products in support of project	Based on content & MSDS, as determined by Fluor Daniel Fernald	As defined by MSDS, work plan, or work permit	Orientation on MSDS for materials used to support the construction project Respirator training and fit test (if required by MSDS)	Medical approval for respirator use (if required)	Contractor to ensure personnel are aware of the hazards of the materials they are using, as defined on the MSDS. Notify Fluor Daniel Fernald IH prior to use of chemicals / products	Fluor Daniel Fernald Chemical/ Hazardous Work Permit (if defined in approved submittal)	
	Hoisting and Rigging hazards			All rigging shall be done under the direction of a rigging "competent person"		Lifts shall be documented on a Fluor Daniel Fernald rigging/ lift plan Equipment operator shall record all lifts in log book Comply with FDF Hoisting and Rigging Manual	Fluor Daniel Fernald Lift Plan (for all lifts)	
	Manual lifting			Briefing on back safety		Limit personal lifting to 50 pounds, without assistance from co-workers. Lifting 35 lbs or greater- evaluate methods and capability of personnel		
	HOT Work- Flame cutting, Welding, grinding or other open flame/ spark producing activity		Fire retardant clothing (NOMEX required) and gloves Leathers (as needed)	Fire watch training Review of MSDS		A trained fire watch shall be present with appropriate firefighting equipment Fire extinguisher (UL or FM listed) Remove combustibles from area	Fluor Daniel Fernald Open Flame & Welding Permit	

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Fire Hazards					Fire extinguisher at all hazard locations and re-fueling operations Refueling of all fuel powered equipment or tools shall occur only after the equipment or tools have been shut off and sufficient time allowed for the engine to cool down No open flame/welding without Fluor Daniel Fernald Flame Permit Smoking shall only be permitted in designated location (signed & butt can) Smoking/Open flame will not be permitted within 25 feet of combustible storage locations or re-fueling operations All fuels shall be stored in listed safety cans in designated areas only & be labeled		
	Noise	Contractor to conduct required noise exposure evaluations	Hearing protection required during the operation of power hand tools/equipment and heavy equipment that generate sound levels 85 dBA	Contractor's Hearing Conservation Program (HCP) for personnel exposed to an 8-Hr TWA that is 85 dBA Safety briefing on the proper use/care of hearing protection	Contractor provided annual audiometric evaluation for personnel in HCP	Equipment and areas having noise levels 85 dBA are to be identified with "Caution - Hearing Protection Required" postings		

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Hand-arm vibration from power hand tools; e.g., jackhammer, chain saw or other like equipment		Anti-vibration gloves shall be used when using vibrating hand tools> 2 hours in one day or > 1 hour on consecutive days	Briefing for involved workers on vibration hazards		Personnel shall dress warmly when using power hand tools in cold weather Personnel shall take a 10 minute break from vibration for each hour a vibrating hand tool is operated		
	Severe Weather					Suspend all outdoor work and move to a safe location. Work will not resume for 30 minutes after the last lightning flash/strike		
	Biological hazards (ticks, stinging or biting insects, chiggers, poison ivy, etc.)		Gather clothing and tape at ankles and wrist. Use insect repellent, as needed	Brief work force as to how to identify the hazards that may be encountered	Notify FDF Medical & Contractor supervision of any known allergies	Have work areas and paths to and from work areas mowed prior to mobilization and maintained Areas of tall grass/weeds shall not be accessed.		Check skin and head carefully for ticks after finishing work. Wash hands and face prior to breaks, lunch and end of shift Thorough washing is required if contact is made with poison ivy or other like plants

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	ALL ELEVATED WORK AND LADDERS - Personnel injury due to falls		Full body harness and lanyard when exposed to falls 6-ft.	Training in proper use of fall protection equipment (as required). Documentation of training to be forwarded to FDF CM Training in the proper use of ladders and ladder safety. Documentation of training to be forwarded to FDF CM Training in the proper use of aerial platforms and other manlift devices. Documentation of training to be forwarded to FDF		FDF Contractor Ladder Inspection Program shall be followed Ladders shall have current inspection sticker Ladders shall be secured in-place prior to use Contractor ladder competent person shall inspect all ladders monthly Contractor personnel shall inspect ladder daily prior to use 100% full protection required for elevated work 6-ft. Control (barricade) all areas below overhead work		

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1. GENERAL PROJECT MINIMUM REQUIREMENTS (continued)	Night Work	Contractor to conduct lighting survey	Traffic Safety Vest, made of high visibility material to be red or orange with reflective striping			<p>Provide auxiliary lighting to maintain lighting levels in accordance with OSHA 1910.120(m) - (5 foot-candles for general site areas and indoor areas; 3 foot-candles for excavation work areas, accessways, active storage areas, refueling, and field maintenance areas)</p> <p>Auxiliary lighting shall be turned on an adequate time prior to sunset and remain on an adequate time after sunrise at active worksites</p> <p>A lighting survey shall be performed prior to start of work</p> <p>Personnel working during dark hours shall carry a working flashlight, if likely to be in dark areas</p>		

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2. VISITORS TO THE CONSTRUCTION WORK SITE <i>Note: Visitors shall be briefed each day.</i>	Escorted Visitors- General industrial safety hazards		<p>The minimum protection is:</p> <ul style="list-style-type: none">• Safety glasses with rigid side shields or goggles (safety glasses ANSI Z87.1 listed)• Hard hat (only ANSI Z89.1 listed)• Sturdy leather work boots• Traffic Safety Vest <p>Wear any additional PPE as required by briefing for area of visit</p>	<p>Site Access Training</p> <p>Orientation to the Health and Safety Requirements Matrix - VISITORS SECTION ONLY and sign the VISITORS acknowledgment log</p> <p>Shall be briefed on the current work activity, associated hazards, and Fluor Daniel Fernald Work permit as it may apply to visit</p> <p>Unescorted visitors must complete site GET training</p>	Personnel shall report all injuries to Fluor Daniel Fernald Medical Department, promptly	<p>Escorted visitors shall be escorted by personnel that have completed the briefing on this entire Safety Matrix, have completed training and are aware of the current activities and hazards.</p> <p>Unescorted visitors must receive authorization from the HSO or CM prior to unescorted entry for each day or visit</p> <p>Visitors may not enter any exclusion zone or Radiologically Controlled area without proper Radiological training and approval from the FDF HSO</p> <p>Visitors include:</p> <ul style="list-style-type: none">• Hands-off inspection• Site tours / observation /non-routine visits /non-OSDF project personnel <p>Visitors may not:</p> <ul style="list-style-type: none">• Supervise any work activities• Operate equipment or tools• Perform any manual labor• Perform survey /monitoring activities involving equipment or instrumentation		

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2. VISITORS TO THE CONSTRUCTION WORK SITE (Continued)	Driving (bus/van) tours - Escorted		None required	None Required	None Required	Construction management shall be informed prior to tour Visitors may not exit the bus/van at any time within the active construction limits. Visitors may not enter any exclusion zone or Radiologically Controlled area without proper Radiological training and approval from the FDF HSO		
3. SERVICE PERSONNEL ENTERING THE CONSTRUCTION WORK SITE, BUT NOT ANY RADIOLOGICAL AREAS	General industrial safety hazards		The minimum protection is: <ul style="list-style-type: none">• Safety glasses with rigid side shields or goggles (safety glasses ANSI Z87.1 listed)• Hard hat (only ANSI Z89.1 listed)• Steel/ fiberglass toed, leather safety (shoes) boots (ANSI Z41 listed)• Traffic Safety Vest Wear any additional PPE required for work task or as required by briefing for area of visit	Site Access Training Orientation to the Health and Safety Requirements Matrix - SERVICE PERSONNEL SECTION ONLY and sign the VISITORS acknowledgment log Shall be briefed on the current work activity, associated hazards, and Fluor Daniel Fernald Work permit as it may apply to visit	Personnel shall report all Accidents &/or injuries to Fluor Daniel Fernald Medical Department, promptly	All repair/service work will be done away from any active work areas Personnel may not enter any exclusion zone or Radiologically Controlled area without proper Radiological training and approval from the HSO Service personnel tools and equipment are to be inspected by contractor HSO and approved by FDF HSO prior to entry to work areas		

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4. INSTALL OFFICE TRAILER AND ELECTRIC POWER TO TRAILER	Striking an underground utility (tie-downs & ground rods)					Fluor Daniel Fernald CM shall ensure that all surrounding utilities and any other hazards are clearly marked on a drawing and flagged in the field before start of excavation	Fluor Daniel Fernald Penetration Permit	
	Electrical shock and/or uncontrolled release of energy (any utility)			Site Energy Control Training (OP-0004)		Electrical circuits shall be de- energized and under energy control prior to any work. Personnel involved with Energy Control (lockout/tagout) shall have complete Fluor Daniel Fernald's OP- 0004 Energy Control Procedure training	Outage permit, as needed	

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5. USE OF VEHICLES AND HEAVY EQUIPMENT	Equipment operation		Seat belts at all times	Training to manufactures owner manual required to operate equipment, with verification provided to Fluor Daniel Fernald CM		Electronic back-up alarms required for all equipment or motion alarm required for all bi-directional equipment (ie., track excavators and roller compactors) Swing radius of equipment shall be barricaded or a designated spotter in- place to prevent personnel from being struck Speed limit 15 mph within construction site, 10 mph within the cell areas Operator shall perform a maintenance/service check prior to use, daily and document Equipment shall only be used as intended by the manufacturer and within the defined limits		

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6. MOBILIZATION	Construction site control					All tools and equipment are to be inspected by contractor HSO and approved by FDF HSO prior to entry to work areas Construction barricade shall be erected around the construction area with caution/construction signs to establish Construction Work Area Construction area shall be completely barricaded (secured) during non-work hours		
	Radiological site control	TLD Required, as posted.				Prior to the removal of any perimeter rope or fence demarcating a radiological area, Radiological Control shall be notified		

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7. SET-UP TRAFFIC CONTROL & ACCESS AREAS	Heavy Equipment			Brief equipment operator on traffic patterns and/or plans		Contractor shall ensure that traffic patterns to control equipment flow are established per traffic plan All established access routes (roads) shall be addressed in a traffic control plan. Hazards such as overhead hazards must be addresses Signals, signs & warnings shall be installed and maintained by the contractor Back-up spotters and/or flaggers may be required		
	Personnel Safety			Brief personnel on traffic patterns and/or plans and their limitations		All personnel within the active construction area are required to wear a traffic safety vest		
8. INSTALLATION OF PROJECT FENCING	Striking an underground utility					Fluor Daniel Fernald CM shall ensure that all surrounding utilities and any other hazards are clearly marked on a drawing and flagged in the field before start of excavation	Fluor Daniel Fernald Penetration Permit	
	Personnel injury from handling fence materials (barbed wire)		Leather palm gloves Long sleeve shirt	Brief personnel on safe handling of fencing materials				

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9. CLEARING & GRUBBING- All areas	Chipping operation for clearing & grubbing - Personnel injury		Goggles or face shield maybe required, if dust/chipping causes wind blown eye hazards Hearing protection required for chipping activities	Training to manufactures owner manual required to operate equipment, with verification provided to Fluor Daniel Fernald CM		Ensure that personnel operating the chipper are NOT wearing loose or baggy clothing Follow manufactures instruction for proper/safe handling of materials to be fed into the chipper		
	Power hand tools (chain saws)- Personnel Injury		Goggles or face shield Leather chaps Hearing protection Leather gloves or equal	Personnel shall be briefed on the manufacturers operation & safety requirements, prior to use		Ensure that all equipment guards are in place prior to operation of tools See hand/arm vibration hazard in section #1		
	Injury from falling trees & dead branches					Personnel shall be kept clear of tree falling area Establish watch person if area is not visible to chain saw operator		
	Material (tree/wood/fencing materials) movement - personnel injury		Leather palm gloves, when handling materials			Determine total weight before making personnel lifts that might cause injury		

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9. CLEARING & GRUBBING- All areas (continued)	Potential Uranium contamination while removing roadway debris	RCT to monitor during cutting/removal activities				Radiological contamination survey required during the removal process of roadway materials If a Radiologically Contaminated Area is posted, work will stop within the posted area until the work force is trained and directed to continue. Follow the requirements for Work Within A Radiological Contamination Area	FDF RWP	Personnel and Material monitoring (and decontamination of equipment as necessary based on survey results) required to exit radiological areas
	Concrete saw operation		Face shield Hearing protection, if 85 dBA	Training to manufacturer's /owner's manual required to operate equipment, with verification provided to Fluor Daniel Fernald CM Respirator training and fit test (if dust control measures fail)	Medical approval for respirator use (if required)	Maintain dust control by the use of wetting methods or equal Visual dust generation should be avoided - If generated, Fluor Daniel Fernald IH shall be called to evaluate the need for respiratory protection Contact RCT for radiological monitoring support prior to saw cutting		
10. ALL EXCAVATION/ EARTHWORK ACTIVITIES (Including - clay liner, sediment control, basin/ discharge line and stockpile/ borrow areas, etc.)	Struck by heavy equipment &/or truck traffic		Hearing protection, if 85 dBA Brightly colored traffic safety vests			Define walkways & equipment traffic patterns to limit exposure to truck traffic Flaggers required in congested locations		

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ENVIRONMENTAL, HEALTH & SAFETY, TRAINING REQUIREMENTS MATRIX

Project: **ON-SITE DISPOSAL FACILITY PROJECT- PHASE II**

ACTIVITY (TASKS)	HAZARD IDENTIFICATION	FREQUENCY & TYPE OF AIR AND PERSONNEL MONITORING REQUIRED	PERSONNEL PROTECTIVE EQUIPMENT	TRAINING REQUIREMENTS	MEDICAL MONITORING AND SURVEILLANCE REQUIREMENTS	ADMINISTRATIVE AND ENGINEERING CONTROL MEASURES	PERMITS	DECONTAMINATION AND DISPOSAL PROCEDURES
10. ALL EXCAVATION/ EARTHWORK ACTIVITIES (Including - clay liner, sediment control, basin/ discharge line and stockpile/ borrow areas, etc.) (Continued)	Excavation cave-in hazard, when personnel exposure is present			Competent Person training (OSHA 1926 Subpart P)		Competent person to be at work site during activities associated with excavation hazards Inactive excavations are to be physically barricaded and posted Persons shall only enter excavation after protection systems/sloping, as needed have been reviewed and approved by the Competent Person. When working within an excavation without proper shoring or sloping methods, the minimum of two times the height must be maintained as a the safe working distance from the vertical sidewall	Fluor Daniel Fernald Excavation Inspection Form Fluor Daniel Fernald Inspection Log	
	Soil Compacting - Foot injury		Foot guards (metatarsal) if exposed to "jumping-jack" like equipment compactors					
	Nuisance dust	Periodic checks of general area				Visual dust will not be permitted beyond defined limits in dust control plan (see part 6 exhibit E)		

ENVIRONMENTAL, HEALTH & SAFETY, TRAINING REQUIREMENTS MATRIX

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10. ALL EXCAVATION/ EARTHWORK ACTIVITIES (Including - clay liner, sediment control, basin/ discharge line and stockpile/ borrow areas, etc.) (Continued)	Confined Spaces- hazardous atmospheres/exposures			Confined Space training maybe required based hazards created during work activities.	FDF Medical approval required if confined space training is required	The Competent Person shall request Fluor Daniel Fernald IH to verify the air quality of all excavations 4 feet in depth prior to personnel entry.	Fluor Daniel Fernald Confined Space Evaluation/ Permit	
	Striking an underground utility					Fluor Daniel Fernald CM shall ensure that all surrounding utilities and any other hazards are clearly marked on a drawing and flagged in the field before start of excavation Hand dig when within 3 feet of any know active utility	Fluor Daniel Fernald Penetration Permit	
	Discovery of unknown / un- characterized material(s) that are not addressed in work plan or procedure					STOP WORK in that area, secure area of discovery and immediately notify FDF HSO and Construction Management FDF RCT to perform a radiological survey of the discovery and evaluate for uranium contamination hazards		Coordinate with FDF RCT for radiological survey of personnel, tools, and equipment within the area of the discovery (as required based on radiological survey) and decontaminate as necessary

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10. ALL EXCAVATION/ EARTHWORK ACTIVITIES (Including - clay liner, sediment control, basin/ discharge line and stockpile/ borrow areas, etc.) (Continued)	Potential Uranium contamination while excavating in non-certified areas	RCT to monitor during excavation activities				Radiological contamination survey required prior to digging and intermittently, thereafter. If a Radiologically Contaminated Area is posted, work will stop within the posted area until the work force is trained and directed to continue. Follow the requirements for "Work Within A Radiological Contamination Area"	FDF RWP	Personnel and Material monitoring (and decontamination of equipment as necessary based on survey results) required to exit radiological areas
11. ROCK REMOVAL FROM SOIL	Manual methods- Personnel injuries, Back Injuries			All involved personnel shall receive special back injury awareness training prior to task (provided by FDF)		Management control for personnel assigned to hand rock picking. Suggest rotating the work force. Have personnel stretch prior to start of work		
	Machines/ Screeners		Contractor to monitor for noise	Contractor to verify training for model of equipment being used		Must be included into Safe Work Plan to include maintenance, repair & operation		
12. CONSTRUCT &/or MANAGE SEDIMENT BASINS AND EROSION CONTROL	Striking an underground utility					Fluor Daniel Fernald CM shall ensure that all surrounding utilities and any other hazards are clearly marked on a drawing and flagged in the field before start of excavation	Fluor Daniel Fernald Penetration Permit	

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12. CONSTRUCT &/or MANAGE SEDIMENT BASINS AND EROSION CONTROL (Continued)	Concrete placement - Personnel injury (burns)		Rubber gloves Face shield, where splash potential exist Rubber boots (as required by MSDS)	Orientation on MSDS		Emergency eye wash/body spray within 100 feet of work area Spotter for backing trucks	FDF Chemical/ Hazardous Material Work Permit	Truck wash-out in Fluor Daniel Fernald CM designated areas only
	Removal of sediment					Safety Work Plan to include water safety/ drowning controls		
	Soil Compacting - Foot Injury		Foot guards (metatarsal) if exposed to "jumping-jack" like equipment compactors					
	Install silt fencing - Impalement					Install "rebar" type caps on posts/stakes under 4 feet high		
	Grass seed area - Eye Injury		Goggles if windy conditions are present during seeding			Ensure that bystanders are clear of area		
13. INSTALLATION OF LINER & CAP SYSTEMS (Including GML/GCL)	Movement of materials- Personnel injury		Personnel handling the liner &/or working around hot surfaces shall wear long sleeve shirts	Involved personnel shall be briefed on back injury prevention at daily briefings		Use mechanical equipment to move fabric as much as possible. Workers must limit lifting to 50 lbs Specific heat stress controls for liner installation may be required		

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13. INSTALLATION OF LINER & CAP SYSTEMS (Including GML/GCL) (Continued)	Mechanical equipment to move geotextile (CGL/GML) materials		Safety equipment as required by the manufacture	Personnel shall be trained on the type of equipment to be used		The operation of this equipment shall be defined within the Safe Work Plan. If ATV's or other like equipment are to used, operators shall wear a approved motorcycle helmet and the ATV shall have a marker flag mounted to the unit. The maximum speed shall be 10 mph and will not be permitted to operate horizontally on a slope of the cell. ATV shall be equipped with head and tail lights if utilized during dark hours. Operator shall walk-down area of ATV use prior to usage to ensure the area is clear of hazards/obstacles. Equipment/material shall be secured in baskets or other means when being transported by ATV. Electronic back- up alarm required on ATV.		
	Seasonal cover					Use of crusting agents or other materials must be approved by FDF prior to use and be addressed in Safe Work Plan		
	Liner crew working in a Non-Radiologically controlled area			Contractor may request exception from RAD I training, based on work location hazards		This exception is only possible if work is done outside all radiologically posted areas		

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13. INSTALLATION OF LINER & CAP SYSTEMS (Including GML/GCL) (Continued)	Welding of liner materials- Personnel injury (burns)		Long sleeves	Personnel shall be trained on the welding equipment manufactures's operational manual & safety precautions before use		Electrical power supply shall have GFCI protection for workers Long sleeves or equal protection shall be provided to seamer/welder personnel		
	Personnel Injury - Slipping		Alternate other type of safety footwear may be used, only after approval from Fluor Daniel Fernald.			Personnel shall verify that soles of work boots are clean and in good condition. Boots with worn soles are to be replaced Walking on liner shall only be permitted in DRY conditions, unless work plan defines alternate methods of slipping protection		
14. PIPELINE INSTALLATION- HDPE PIPE	Pipe fusing operations- Injury		Wear gloves when exposed to heated surfaces	Training to manufacturer's owner manual or factory representative required to operate equipment and verification provided to Fluor Daniel Fernald CM		All guards for both pinch points and heated surfaces must be installed before use of equipment All hydro-testing shall be defined within Safe Work Plan		All scrap materials shall be removed at the completion of each joint
	Confined Spaces- hazardous atmospheres or exposures			Confined Space training maybe required based hazards created during work activities.	FDF Medical approval required if confined space training is required	The Competent Person shall request Fluor Daniel Fernald IH to verify the air quality of all excavations 4 feet in depth or manholes prior to personnel entry.	Fluor Daniel Fernald Confined Space Evaluation/ Permit	
	Welding/fusing of pipe- Personnel injury (shock)					Electrical power supply shall be protection by GFCI		

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15. WORKING OVER OR NEAR WATER GREATER THAN 3 FOOT DEEP	Drowning hazard		U.S. Coast Guard-approved life jacket or buoyant work vests.			Life vests required when within 5 feet of waters edge Inspect vest/jackets for defects Ring buoys with at least 90 feet of line shall be provided and readily available for emergency rescue operations		
16. MANAGE EQUIPMENT WASH FACILITY	Struck by heavy equipment & truck traffic during stone placement					Restrict pedestrians in this area Personnel walking on "rip rap" or other large stone should be limited/restricted		
17. WHEEL WASH HEAVY EQUIPMENT	Manual cleaning - Hand injury		Leather palm gloves for handling sharp/heavy items			Equipment/vehicle shall have the engine off and brakes set prior to cleaning process All hydraulics shall be lowered or blocked before cleaning equipment		
	Water spray - Eye injury		Goggles or face shield, as required by manufacturer of the power spray equipment Rubber gloves & Boots for washing activities			Follow requirements of manufacturer of any power wash equipment, if used Limit personnel to hazard location Required warning/caution signs for spray operation		

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18. PLACEMENT OF IMPACTED MATERIALS INTO CELLS	Exposure to fugitive emissions (dust)					Proactive dust suppression control plan will be followed to maintain dust emission levels below personnel exposure limits Safe Work Place to define methods of placement		
	Struck by heavy equipment &/or truck traffic			Brief personnel on traffic patterns and /or plans		Define walkways & equipment traffic patterns to limit exposure to truck traffic Flaggers required in congested locations		
19. WORK WITHIN THE MATERIAL TRANSFER AREA	Uranium contamination	TLD Breathing Zone (BZ) air sampler for each operator performing work within the radiological area				Operators who are driving vehicles along the Haul Road remain within enclosed cabs at all times when in Radiological Areas. Accessing the Contamination Area with equipment that does not have enclosed cabs will require the operator to observe the requirements for WORK WITHIN A RADIOLOGICAL CONTAMINATION AREA. FDF RCT to perform daily survey of the vehicles, containers and area of the Material Transfer Area.		Transfer vehicles will exit the OSDF Contamination Area at the OSDF decontamination facility; all vehicles to be decontaminated (as necessary) and radiologically surveyed prior to returning to the Material Transfer Area.

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20. WORK WITHIN A RADIOLOGICAL CONTAMINATION AREA	Uranium contamination	TLD Breathing Zone (BZ) air sampler: 1) for 25% of personnel (minimum) in each work group 2) for each operator performing work within the radiological area	A single, full set of anti- contamination clothing (coveralls, gloves, booties, shoe covers, hood), minimum, for work in radiological areas: 1) cloth anti-c's are primary type of anti-c required. (nomex for hot work). 2) disposable anti-c requirements: a) water resistant anti-c's required for wet work or cloth sweat through. b) single layer of papers not permitted for work in radiological areas (asbestos work). c) chemical resistant required for chemical work or for total water barrier 3) knee high rubber boots required as shoe covers for personnel working on foot in the field in areas where mud is above the ankles.	RAD II Training Respiratory Protection Training 24 Hour Supervised field experience	Baseline, every 60 days, and exit bioassay (urine) sample program Baseline, annual, and exit In-vivo monitoring Medical approval to wear respiratory protection	RCT to periodically monitor during performance of work within radiological areas and material handling activities All affected radiological areas will be posted as Contamination Areas Implement dust control, as per plan, to minimize airborne radioactive hazards	FDF RWP	Contain and dispose of all wastes generated within radiological areas as radioactive materials Remove dirt and mud from materials and equipment for radiological surveys to exit radiological areas Personal and material monitoring required to exit radiological areas

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20. WORK WITHIN A RADIOLOGICAL AREA (continued)			4) hood may be replaced by skull cap except for those who are on foot in the field or if respirator is required. 5) equipment operators within enclosed cabs, while in a Contamination Area, may operate at a reduced level of PPE than is described in this section. 6) Full face respirator required for Airborne Radioactivity Area and personnel within 50 feet of any active loading/unloading dumping activity - The extent and level of effort put forth in the implementation of dust control plan (proactive approach) will greatly reduce the need for respiratory protection 7) PAPRs required for hot work on contaminated materials					

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21. DRYING OF CELL AND LINER MATERIAL	General - Pre flight requirements (Usage of helicopter)			Subcontractor shall verify and provide copy of pilot(s) valid FAA license	Documentation of current FAA Medical Certification shall be provided Proof of substance abuse testing within the last 30 days shall be provided This activity is only approved for "Certified" areas	Contractor shall verify and maintain maintenance records on the helicopter utilized Contractor shall brief pilot(s) on the FEMP site, indicating the approved landing zones and all elevated or overhead hazard located near the worksite (ie., overhead electric wires). Hazards shall be identified on map(s) provided to the pilot(s) Radio and/or visual communication between the pilot and Contractor on the ground shall be required Helicopter usage shall be limited to daytime hours Frequent breaks shall be taken at the pilot's discretion. Helicopter shall not be permitted to fly over any FEMP structure or occupied area(s)		

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21. DRYING OF CELL AND LINER MATERIAL (Continued)	Hazards/Exposure to Personnel on Ground (Usage of helicopter)	Contractor to conduct required noise level evaluations	Goggles required to be worn by all personnel within the subcontractor established "Restricted Area" Hearing PPE shall be worn all personnel exposed to noise levels > 85 dBA.			Contractor to specify a restricted area to limit wind blown dust hazards to personnel working in area Only Contractor authorized personnel may occupy the berm of the cell during helicopter operations No ground personnel shall approach the helicopter without the pilot's permission. Approaching the helicopter shall be from the front of the helicopter only.		
	Hazards/Exposure to Personnel (Use of fans &/or blowers)	Contractor to conduct required noise level evaluations	Goggles required to be worn by all personnel within the subcontractor established "Restricted Area" Hearing PPE shall be worn all personnel exposed to noise levels > 85dBA.			Contractor to specify a restricted area to limit wind blown dust hazards to personnel working in area This activity is only approved for "Certified" areas Electric power/extension cords shall not be permitted to contact standing water		

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21. DRYING OF CELL AND LINER MATERIAL (Continued)	Temporary heating - Use of heaters, "open-flame", and/or other heat producing devices	Contractor shall conduct air quality monitoring within any enclosed area	As required by equipment manufacturer	Trained Fire Watch shall be present at all times open flame devices are used		Only UL®, FM®, or AGA certified/listed equipment shall be utilized Equipment shall be only be used for its intended purpose and shall not be modified for any purpose Fuel powered heating systems shall require 24-hour coverage by Contractor Fire extinguishers (UL® or FM® listed) shall be readily accessible to fire watch personnel All temporary enclosures and their support structures shall be constructed of noncombustible or approved fire retardant materials Combustible/Flammable materials shall not be stored within or around any temporary enclosure or "Restricted Area" Contractor shall establish, post, and control access within a "Restricted Area" around the discharge area of any heat producing equipment The usage of any fuel-fired heaters must be submitted and approved by Fluor Daniel Fernald prior to use	FDF Open Flame and Welding Permit	

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22. DUST CONTROL	Dusty conditions			Equipment operators and vehicle drivers shall be briefed on dust control plan		Visual dust will NOT be permitted beyond limits of the "Fugitive Dust Control Requirements" Proactive dust suppression control plan will be followed to maintain dust emission levels below personnel exposure limits		
	Standing on elevated platform or truck to fill water truck - Injury from fall					Proper height ladders and platforms required for access to top of water wagons or tanks		
	Apply Crusting Agent or Surfactant- chemical exposure		As defined by MSDS, work plan, or work permit	Brief personnel on MSDS requirements Respirator training and fit test (if required by MSDS)	Medical approval for respirator use (if required)	Contractor to ensure personnel are aware of the hazards of the materials they are using, as defined on the MSDS.	Fluor Daniel Fernald Chemical/ Hazardous Work Permit (if defined in approved submittal	

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23. HANDLING OF PRESUMED ASBESTOS CONTAINING MATERIAL (PACM)	Exposure to asbestos fibers	<p>Contractor shall perform personal air monitoring in compliance with 29 CFR 1926.1101 including sampling necessary to complete initial exposure assessment</p> <p>FDF to conduct side-by-side personal air samples as determined by FDF Industrial Hygiene</p>	Disposable outer Anti-C's including gloves, and ½ Mask Respirator (for PACM work outside of a Radiological Area) with HEPA filters until the Contractor completes a negative exposure assessment in accordance with the OSHA Construction Asbestos Standard.	<p>Competent Person - 40 hour asbestos supervisor trained).</p> <p>Employees Handling PACM (Class III) - training as specified in 29 CFR 1926.1101 (k)(9)(viii). This training requirement can be met by attending FDF Asbestos O&M training (course # 1868) along with reviewing the asbestos work practices with the appropriate workers. Respiratory Fit Test for Asbestos every six months</p> <p>Workers who may come into contact with PACM, but are not required to handle PACM, must attend Class IV asbestos awareness training as specified in 29 CFR 1926.1101 (k)(9)(vi).</p>	Competent person and those employees assigned to handle PACM which result in exposure above the OSHA PEL for asbestos will participate in medical surveillance program.	<p>Use surfactant, lockdown, or encapsulant prior to handling PACM</p> <p>No visible emissions may occur when handling materials known to contain PACM</p> <p>Competent person shall make daily inspection of work area to ensure proper work practices area being used</p> <p>Contractor prepared PACM Handling Plan</p>	FDF Asbestos Work Permit	<p>Friable PACM will be wet down and /or encapsulated and double bagged or wrapped in two layers of 6 mil plastic and labeled with an asbestos warning label</p> <p>PACM will be staged in an area designated for PACM. Area will be bannered with asbestos warning tape</p> <p>HEPA Vacuum will be used to remove all dust and debris from disposable anti-c's prior to doffing.</p> <p>Anti-C's and cartridges will be disposed of as asbestos waste.</p> <p>Used respirators shall be segregated and returned to laundry for recycling in asbestos labeled bags.</p>

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24. CONCRETE PLACEMENT- General	Personnel injury (burns)		Rubber gloves Face shield, where splash potential exist Rubber boots (as required by MSDS)	Orientation on MSDS		Emergency eye wash/body spray within 100 feet of work area Spotter for backing trucks		Truck wash-out in Fluor Daniel Fernald CM designated areas only
25. MANAGEMENT OF LCS SYSTEM (Manhole to life station)	Personnel Injury			Personnel shall be briefed on Safe Work Plan before start of work		Safe Work Plan shall define all tasks and provide direction to work force		
26. MONITORING OR SURVEY SUPPORT ACTIVITIES	Personnel Injury		Traffic safety vests	Personnel shall be brief as needed by the Contractor to ensure the hazards of the work are being communicated.		RCT's, other Contractors, or others performing similar activities shall: • Coordinate entry into the "active" work area with Fluor Daniel Fernald Construction management • Not perform monitoring activities within 50 feet of moving heavy equipment, unless approved by the Fluor Daniel Fernald HSO Monitoring activity in the immediate area (5 feet) of heavy equipment shall only be done after equipment is in a neutral position and operator signals for the approach of the survey personnel		

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ACTIVITY (TASKS)	HAZARD IDENTIFICATION	FREQUENCY & TYPE OF AIR AND PERSONNEL MONITORING REQUIRED	PERSONNEL PROTECTIVE EQUIPMENT	TRAINING REQUIREMENTS	MEDICAL MONITORING AND SURVEILLANCE REQUIREMENTS	ADMINISTRATIVE AND ENGINEERING CONTROL MEASURES	PERMITS	DECONTAMINATION AND DISPOSAL PROCEDURES
27. DEMOBILIZE WORK SITE	Complete Medical surveillance program				Exit Medical surveillance (including and In-Vivo and In-Vitro requirements) shall be completed for personnel terminating work activity at the FEMP			
	Winter stand down					Contractor management to complete a "walk your space" safety walk down to ensure that all work areas are in a safe configuration for the winter stand down		
	Removal of tools, materials and heavy equipment from work area							Remove excessive mud/dirt before leaving work site
END OF MATRIX								END OF MATRIX